

- Statement of purpose and over all project description, describing in a short, concise manner the purpose of each task and how it leads to the accomplishment of the over all project Goals/Objectives
- Scope of Work
- Annual Go/No-go decision points and decision criteria
- Identification of project costs including any Operation office, Laboratory or other taxes or fees. For multi year projects the cost should be broken out by fiscal year
- Project duration and Schedule of key activities and meetings
- Table of Milestones and Deliverables. Milestones and deliverables must be related to the Goals/Objectives of the project

Deliverables

Technical Task Plan	15th of the month in which the funding was received. Updated annually (July 15 th) if multi year project
Quarterly reports	10 th of the month preceding the end of the Quarter
Status Report/Presentation	June 30, 2005
Draft Evaluation Report	July 30, 2005
Final Evaluation Report	August 30, 2005

Period of Performance

Approximately 4 months

General Technical Guidance

Project Title: Technological Feasibility of Excavating a Semi-Circular Drift With a Flat Bottom

Performer: Dr. Kal Bhattachariya

Estimated Funding Amount: \$80K

Background: The current subsurface design for a proposed geologic repository at Yucca Mountain in Nevada includes circular drifts for the emplacement of spent nuclear fuel and high-level radioactive waste. These drifts are to be developed using tunnel boring machines. While circular drifts are known to provide structural stability, they have the disadvantage of requiring a heavy steel invert structure to support the structures, systems and components that are important to safety and important to waste isolation. A new drift configuration may be investigated by the Office of Science, Technology and international in which the circular drift is replaced by a semicircular drift with a flat bottom. This new drift configuration would eliminate the need for the heavy steel invert structure and is expected to provide some cost and schedule benefits to the waste management program. The objective of this task is to perform a feasibility study of the economic, technical, operational and regulatory impacts of changing the shape of the drifts at the proposed Yucca Mountain repository.

Technical Approach:

Using MTS staff and expert consultants, if necessary, a non - "Q" technical study to evaluate the potential impacts, both positive and negative of changing the shape of the drifts at the proposed Yucca Mountain repository. The excavation of emplacement tunnels by mechanical techniques that result in a flat-bottom opening has the potential to affect the a) operational, b) economical, and c) regulatory aspects of an underground repository at Yucca Mountain. The operational issues associated with this form of excavation may include, at a minimum, availability, reliability, advance rate, ground control, health and safety, construction of the waste transport system in the emplacement tunnels, and schedule. Economical issues may include, at a minimum, capital expenditure costs, operating costs, and ground control system costs. Regulatory issues may include, at a minimum, impacts of flat bottom emplacement tunnels on waste isolation (total system performance assessment), and impacts of changing the safety analysis report (SAR) design submitted to the Nuclear Regulatory Commission (NRC).

The evaluation will consider the above described issues, will be confined to excavation of emplacement tunnels only, will utilize mechanical (non drill and blast) excavation techniques, and will consider tunnels equivalent to the size of the current license application (LA) design.

A Technical Task Plan that includes, at a minimum, the following should be developed as the first task in this project:

- Statement of Goals/Objectives for the project